

my collection for permanent study; this number is about six times as large as the sum total of all *Notocypraea* which I could study in the public and private collections of almost all countries of Europe. Most specimens came from Victoria and West Australia, some interesting shells also from South Australia, whereas my personal knowledge of specimens from Tasmania and New South Wales is still rather limited.

LITERATURE CITED

ALLAN, JOYCE

1956. Cowry shells of world seas. Georgian House, Melbourne. i-x; pp. 1-170; pls. 1-15.

BEDDOME, C. E.

1898. Notes on species of *Cypraea* inhabiting the shores of

Tasmania. Proc. Linn. Soc. N. S. Wales, 22: 564-576; plt. 31.

GRIFFITHS, R. JOHN

1961. *Notocypraea* — The shells. The Cowry 1 (2): 10-14 [= 26-30]; pls. 3-4.

1962. A review of the Cypraeidae genus *Notocypraea*. Mem. Nat. Mus. Victoria, no. 25: 211-231; 4 pls.

1962 a. *Cypraea piperita* GRAY, 1825 (Gastropoda); proposed suppression under the plenary powers. Z. N. (S.) 1510. Bull. Zool. Nomencl., 19 (5): 317-322.

SCHILDER, FRANZ ALFRED

1961. Nachträge zum Katalog der Cypraeacea von 1941. Arch. Moll. 90 (4-6): 145-153

SOWERBY, GEORGE BRETTINGHAM (second of name)

1870. *Cypraea*. In Thes. Conch., 4: 58 pp.; 37 pls.

The Egg Capsule and Young of *Beringius eyerdami* SMITH (Neptuneidae)

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(Plate 7)

Beringius eyerdami SMITH, 1959, though only recently discovered and described, is widely distributed along the coast of British Columbia. I now have specimens from seven localities between Swifsure Light in the entrance to Juan de Fuca Strait and Hakai Pass near Calvert Island. More specimens have been secured in Hecate Strait than in any other region. Here it occurs at depths of about 50 fathoms on relatively smooth bottoms of sandy mud with some gravel and shell. Associated with it here are *Neptunea lirata* (GMELIN, 1791), *N. smirnia* (DALL, 1919) and an unnamed species of *Neptunea* that is presently under study by Allyn Smith of the California Academy of Sciences.

On a voyage that lasted from April 8 to 13, 1962, a trawler operating on Goose Island Banks, Hecate Strait, B. C., brought up in its net three specimens of *Beringius eyerdami* and, along with them, a valve of *Pecten caurinus* to which were attached three egg capsules of a type new to me. While the mere association of the capsules with the adult *B. eyerdami* would not in itself

serve to identify them, a close study of the young in the capsules has convinced me that they are that species.

The capsules are larger than any reported so far in this group of mollusks and differ also in some other features. Each capsule is cemented to the substrate by a double flap-like extension of its outer material arising from its long edge. Each is a thin pouch-like vessel placed so as to overlap the next one (Plate 7, fig. 1). The capsules measured wet were 42.2 mm by 32.6 mm; 41.5 mm by 31 mm and 41 mm by 38 mm. When dry, corresponding measurements are 38 by 25, 38 by 24, and 35 by 28 millimeters.

The outer surfaces of the capsules are of an off-white colour, and when wet appear very pale yellow. Each capsule is a complete envelope within an envelope, the two differing in structure but of approximately equal thickness. The inner envelope, however, is much tougher, more difficult to cut than the outer, and when wet, is strongly resistant to tearing. Two of the capsules were intact, and in these the edges were firmly closed all

round, with no visible trace of a suture. The one empty capsule is ruptured along and immediately below the free edge. From this edge projects a tuft of coarse yellow fibres.

The outer element of the capsule is about 0.15 mm in thickness, smooth, and, at $50\times$ magnification, it reveals no structure. Beneath this surface is a corneous layer bearing on its inner surface fine ridges parallel and in the long axis of the capsule. These are irregularly spaced and have the appearance of hairs cemented to the surface. The most distinctive feature of the capsule is that the entire space between the inner and outer envelopes is packed with long slender fibres strongly yellow in colour. These are arranged in the long axis of the structure. Many of them are attached to the inner surface of the outer capsule and appear to be continuous with it and of the same material. The longer threads are about 40 mm in length and most are free at each end.

The outer surface of the inner capsule bears many delicate laminae, again in the long axis of the capsule. They differ in height and spacing but average $4\frac{1}{2}$ laminae per millimeter. Some are plain, others sinuous. Many of the interenvelope fibres appear to arise as lamellae detached from this inner capsule. The surface lining the brood chamber is smoothly finished and without apparent structural detail. - Young: Each of the complete capsules contains 5 young, two of the ten were crushed and could not be measured. The first 5 listed below were capsule mates as were the last 3. Those 12 mm or more in length bear 3 whorls, the others about $2\frac{1}{2}$ whorls (Plate 7, fig. 2). In each the nuclear whorls originate in an apical concretion and increase rapidly in size. For the first half of the first whorl the suture is deeply channeled, beyond that it is normal for the adult of the species. At $2\frac{1}{2}$ whorls the deep narrow spiral grooves and intervening wide rounded ridges of the adult sculpture are clearly apparent. The nuclear whorls are covered in a delicate cuticle that wrinkles on drying.

The structure of the apical concretion of the first nuclear whorl in these young differs importantly from that in capsular or newly emerged young of *Neptunea tabulata* BAIRD, 1863, *N. smirnia* (DALL, 1919), *N. phoenicea* (DALL, 1919), *N. lirata*, and *N. pribiloffensis* (DALL, 1919). In all these the apex is swollen and stud-like and is not bounded internally by a deep sutural groove. In *Beringius eyerdami*, on the other hand, it is smaller, discrete, and clearly separated from the first whorl by a deep sutural groove. This may prove to be a generic characteristic.

Table 1

Dimensions of capsule young of *Beringius eyerdami*
(measurements in millimeters)

Height	Aperture length	Width of	
		first	second
		Nuclear Whorl	
9.95	4.4	3.5	4.6
12.0	5.2	3.7	4.5
11.0	4.75	3.55	4.2
9.2	4.4	3.7	4.9
9.4	4.85	3.5	5.0
12.5	5.6	3.9	4.6
11.6	4.9	4.1	4.7
10.9	5.4	4.0	4.9

A comparison of the shell thickness of the nuclear whorls at this stage with the thickness of the nuclear whorls attached to the adult shell reveals that a great increase in calcification of the nucleus takes place after the young leave the capsule. It also suggests that the whorls on the adult shell that are usually referred to as the nucleus include one or more post nuclear whorls that have lost their distinctive sculpture. In the present specimens two to two and a half whorls constitute the true nucleus.

